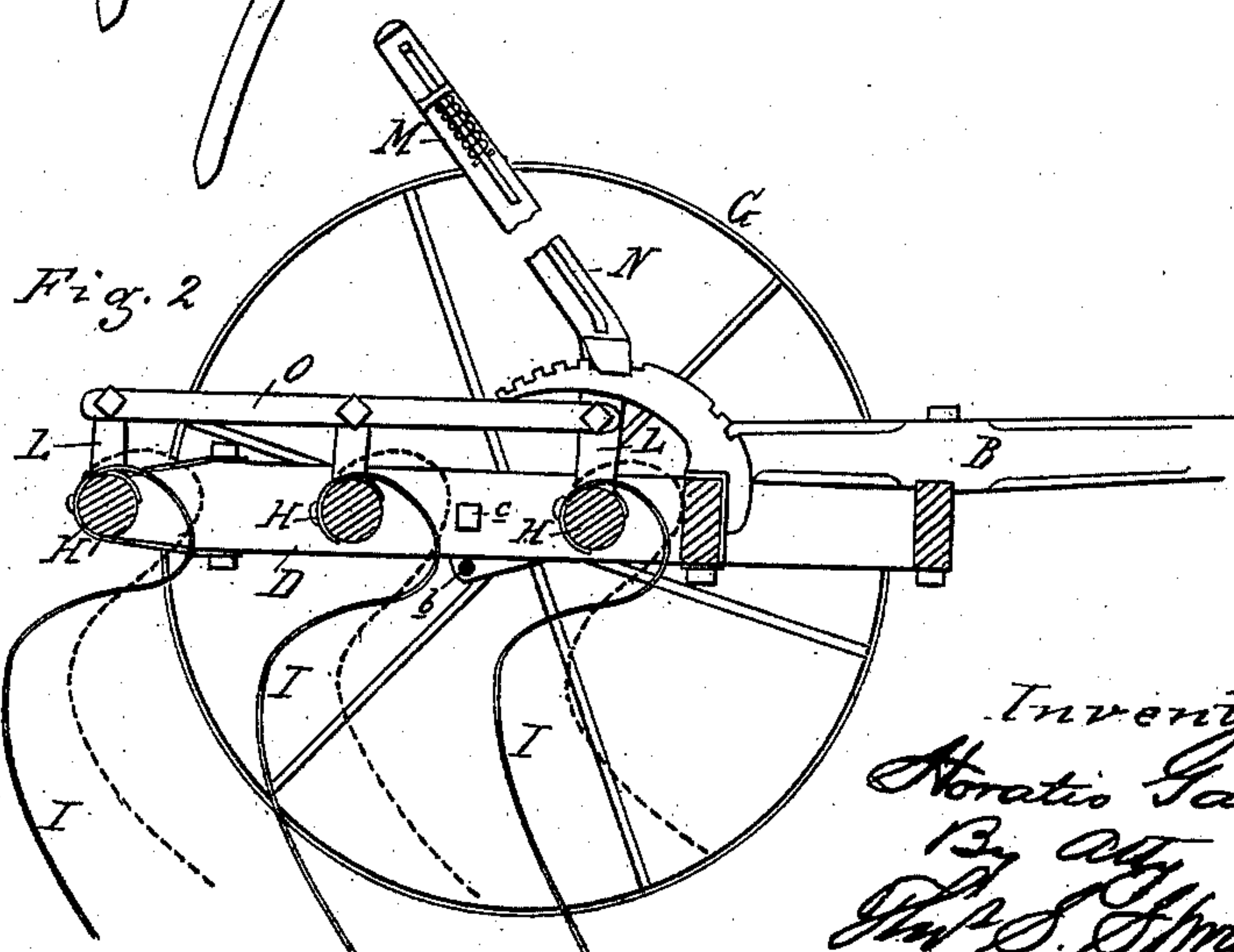
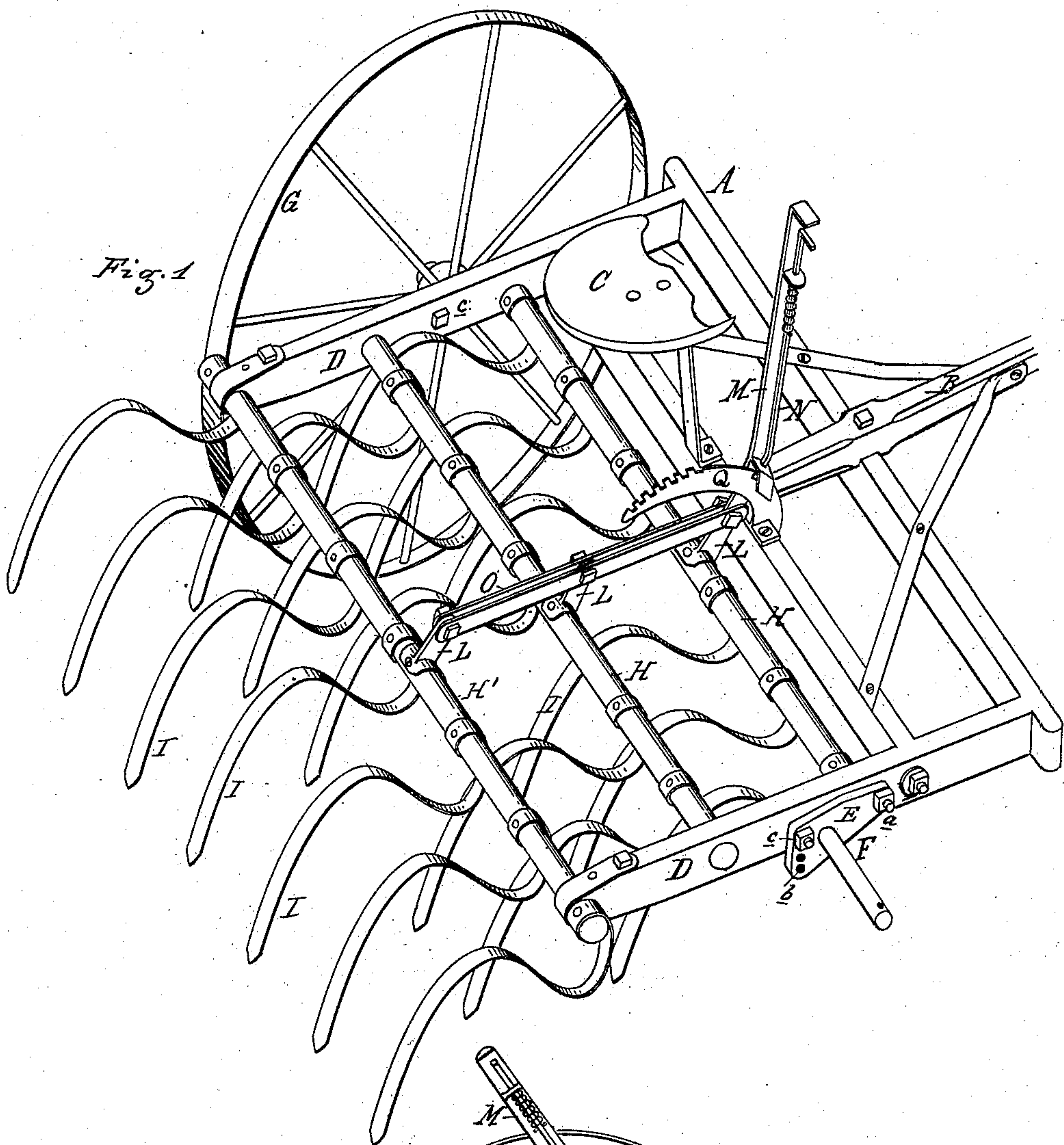


H. GALE.
Spring-Tooth Harrow.

No. 228,054.

Patented May 25, 1880.



Attest:

A. Parthel
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Horatio Gale
By *Atty*
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UNITED STATES PATENT OFFICE.

HORATIO GALE, OF ALBION, MICHIGAN.

SPRING-TOOTH HARROW.

SPECIFICATION forming part of Letters Patent No. 228,054, dated May 25, 1880.

Application filed January 8, 1880.

To all whom it may concern:

Be it known that I, HORATIO GALE, of Albion, in the county of Calhoun and State of Michigan, have invented an Improvement in Spring-Tooth Harrows, of which the following is a specification.

The nature of this invention relates to new and useful improvements in the structure and operation of spring-tooth harrows, by means of which all the teeth may be set simultaneously at any desired pitch or angle to suit the varying conditions of soil where it is to be used; and the invention consists in the peculiar construction and operation of the various parts, all as more fully hereinafter described.

In the drawings, Figure 1 is a perspective view with one wheel removed, and showing the teeth as elevated for transportation. Fig. 2 is a vertical cross-section, showing the teeth as lowered for operation, and also showing, in dotted outline, the teeth as extended forward for the purpose of securing greater pitch.

In the accompanying drawings, which form a part of this specification, A represents a frame, to which the tongue B is secured, and to which also the seat C is attached. The timbers D, which form the sides of this frame, project to the rearward, as shown. To the outer face of each of these timbers is secured a plate, E, from which projects the arm F, upon which the wheel G rotates. This plate is secured at one end by a bolt, *a*, as shown. The opposite end of this plate is widened and provided with a series of holes, *b*, drilled to form a segment of a circle of which the bolt *a* is the pivot. A single bolt, *c*, through one of these holes and the adjacent timber enables the operator at will to raise or lower the frame.

Journalled at each end to the timbers D are the bars H, to which are secured, at overlapping intervals, the spring-teeth I. Preferably the bar

H', which is the rear bar of the implement, is journalled at the outer end of the timbers D, in order that a tooth may be secured at each end outside of the bearing. A notched quadrant is secured to the frame. A crank-arm, L, is secured to each of the tooth-carrying bars, the front one of such crank-arms terminating in a lever, M, which carries a spring-dog, N, which engages with the notches in the quadrant.

A connecting-rod, O, is pivotally secured to each of the crank-arms, so that by one motion of the lever, forward or back, the desired pitch or elevation of all the teeth is simultaneously secured.

I am aware that pivoted harrow-tooth bars have heretofore been employed in connection with bearing-wheels, whereby the inclination of the teeth may be changed and at the same time the harrow-frame raised or lowered; and I am also aware that in wheel-plows the plow-frame can be adjusted vertically on the wheels and the angle of the plow with the frame changed by independent adjustments, and I therefore lay no claim to such invention.

What I claim as my invention is—

In a sulky-harrow, the combination of a frame, D, vertically adjustable on the wheels G, with a harrow composed of a series of bars, H, journalled in the frame D, and armed with spring-teeth and connected together by a rod, O, for adjusting the inclination of the teeth, and the two adjustments being independent of each other, whereby the frame can be raised and lowered as desired and the angle of inclination of the harrow-teeth be varied, substantially as described.

HORATIO GALE.

Witnesses:

H. S. SPRAGUE,
A. BARTHEL.